

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                                 |   |                              |
|---------------------------------|---|------------------------------|
| In re Application of:           | ) |                              |
|                                 | ) |                              |
| Katsumi Yamamoto                | ) | Examiner: Madden, Gregory V. |
|                                 | ) |                              |
| Application No.: 10/603,729     | ) | Art Unit: 2622               |
|                                 | ) |                              |
| Filed: June 24, 2003            | ) | Confirmation No.: 3361       |
|                                 | ) |                              |
| For: IMAGE SENSOR HAVING MICRO- | ) |                              |
| LENS ARRAY SEPARATED WITH       | ) |                              |
| RIDGE STRUCTURES AND METHOD     | ) |                              |
| OF MAKING                       | ) |                              |
| _____                           | ) |                              |

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 Commissioner for Patents  
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 Alexandria, VA 22313-1450

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Sir or Madam:

In response to the Final Office Action mailed February 7, 2008, Appellant respectfully requests review of the Examiner's rejections of claims 1-19 as being obvious over U.S. Patent No. 6,043,481 to Tan et al. (hereinafter "*Tan*") in view of U.S. Patent No. 6,166,369 to Assadi et al. (hereinafter "*Assadi*") in further view of U.S. Patent No. 5,396,090 to Nakai (hereinafter "*Nakai*").

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefore are hereby authorized to be charged to Deposit Account No. 02-2666. Please credit any overpayment to the same deposit account.

Kindly consider the following arguments.

## **Rejections to Be Reviewed**

### Rejections under 35 U.S.C. §103(a)

Claims 1-3, 6, 8-10, 13, and 15-18 stand rejected under 35 U.S.C. §103(a) as being obvious over *Tan* in view of *Assadi*. Claims 5, 7, 12, 14, and 19 stand rejected under 35 U.S.C. §103(a) as being obvious over *Tan* in view of *Assadi* in further view of view of *Nakai*. Claims 4 and 11 stand rejected under 35 U.S.C. §103(a) as being obvious over *Tan* in view of *Assadi* in view of Appellant's alleged admitted prior art.

## **Summary of Claimed Subject Matter**

Appellant's invention as claimed includes an image sensor having a plurality of pixels formed in a semiconductor substrate (§ [0012] of Appellant's Specification). Each pixel includes a light sensitive element (§ [0013] of Appellant's Specification). A micro-lens is formed over each light sensitive element (§ [0013] of Appellant's Specification). A raised ridge structure surrounds each micro-lens (§ [0013] of Appellant's Specification). The raised ridge structure has a triangular cross-section and at least partially supports said micro-lens (§ [0024] of Appellant's Specification). The micro-lens overlays a base portion of the raised ridge structure (Figure 8 of Appellant's Specification).

## **Summary of Prosecution History**

In the third Office Action mailed July 31, 2007, the Examiner rejected independent claims 1, 8, and 15 as being obvious over *Tan* in view of *Assadi*. In the Office Action, the Examiner asserted that *Tan* discloses *inter alia* a raised ridge structure 19 surrounding microlens elements 18 and the microlens elements 18 overlay a base portion of the raised ridge structure 19 (July 31, 2007, Office Action at page 4). The Examiner conceded the *Tan* fails to disclose a raised ridge structure that has a triangular cross-section, but cited *Assadi* for teaching a reflective structure 12 having a triangular cross-section surrounding a microlens 24 (July 31, 2007, Office Action at page 4). The Examiner then concluded that it would have been obvious to combine the reflective structure 12 of *Assadi* with the image sensor of *Tan* because it would allow more light to be reflected to the microlens for diffraction towards the photosensitive device thereby improving fill factor (July 31, 2007, Office Action at page 4).

In the response to the third Office Action mailed July 31, 2007 that Appellant mailed October 31 2007, Appellant argued *inter alia* that combining *Tan* with *Assadi* would not have predictable results, an element of a *prima facie* case of obviousness, because such a combination would make *Assadi* unsatisfactory for its intended purpose. Specifically, Appellant argued that it appears that the purpose of the reflective surfaces 12 in *Assadi* is to diffract incoming light into the photosensitive device 20 (October 31 2007, Response at page 6). For example, *Assadi* essentially teaches that the purpose of the reflective surfaces 12 is to ***focus the greatest possible amount of light onto the photodetectors*** in the photosensitive device 20 (col. 1, lines 36-40 and col. 2, lines 45-51,) (emphasis added). Appellant argued *inter alia* that if the micro-lens elements 18 of *Tan* did overly a base portion of the reflective surfaces 12 in *Assadi*, the surface area available for the reflective surfaces 12 in *Assadi* to reflect and focus light onto a photosensitive device through a microlenses would be ***diminished*** (October 31 2007, Response at page 7). This is in direct contravention of the purpose of *Assadi*.

In the fourth Office Action mailed February 7, 2008, which is the subject of this Request for Pre-Appeal Conference, the Examiner maintained the rejections of independent claims 1, 8, and 15 as being obvious over *Tan* in view of *Assadi*.

### **Argument**

Appellant respectfully submits that the Examiner has used an improper rationale for combining *Tan* with *Assadi* because *Assadi* teaches away from its combination with *Tan*. The combination of *Tan* and *Assadi* makes *Assadi* unsatisfactory for its intended purpose. As such, the Examiner has not made out a *prima facie* case of obviousness of claims 1-19 with *Tan* and *Assadi* as the central references.

## CONCLUSION

Because there are clear errors in the Examiner's rejections, Appellant respectfully requests the Pre-Appeal Conference direct the Examiner to enter an allowance for claims 1-19.

Respectfully submitted,

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

Date: /May 7, 2008/

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## CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below.

|                       |                    |
|-----------------------|--------------------|
| <u>/Sarra J. Kim/</u> | <u>May 7, 2008</u> |
| Sarra J. Kim          | <i>Date</i>        |